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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,983	04/17/2006	Matthew Glen Wheeler	35010148US	8458
32827 7590 06/09/2009 THE OLLILA LAW GROUP LLC 2060 BROADWAY SUITE 300 BOULDER, CO 80302			EXAMINER NGHIEM, MICHAEL P	
			ART UNIT 2863	PAPER NUMBER
			MAIL DATE 06/09/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/575,983

Applicant(s)

WHEELER ET AL.

Examiner

MICHAEL P. NGHIEM

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 25 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 22-24, 26 and 30-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The Amendment filed on March 17, 2009 has been considered.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 3/1, 4, and 6-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The method is not tied to another statutory class (such as a particular apparatus) or transforms an underlying subject matter (such as an article or material). Thus, the method is not a patent eligible process under 35 USC 101 and is directed to non-statutory subject matter. See *In re Bilski*, Appeal No. 2007-1130.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 9, 11-13, 17-21, 25, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pattern (US 6,092,409) in view of Answers.com ("Damping").

Regarding claims 1 and 17, Patten et al. discloses a method and system for validating a flow calibration factor of a flow meter (Abstract, lines 1-2), comprising:

- determining an initial oscillation period (step 901) of a component of said flow meter (via 901);
- determining a current oscillation period of said component (via 403);
- comparing said initial oscillation period to said current oscillation period (step 902);
- detecting a calibration error condition responsive to comparing said initial oscillation period to said current oscillation (column 5, lines 9-12).

Regarding claim 1, Patten et al. further discloses determining the current oscillation period of said component (via 403) from a flow meter vibration (oscillation of flow tube, column 1, lines 34-35) produced in response to an application of a predetermined force to one or more flow tubes of the flow meter (applying a force to a flow tube so the flow tube oscillates, column 1, lines 34-35).

Regarding claims 2 and 18, Patten et al. discloses signaling said calibration error condition (step 904).

Regarding claims 3 and 19, Patten et al. discloses correcting said flow calibration factor responsive to said calibration error condition being detected (column 10, lines 28-30).

Regarding claims 4 and 20, Patten et al. discloses said oscillation periods are determined by solving a single degree of freedom model (measurement of oscillation, column 1, lines 34-35, using sensors, column 1, lines 42-46).

Regarding claims 5 and 21, Patten et al. discloses said single degree of freedom model is solved using a method comprising the steps of: applying a known force to said flow meter component (column 1, lines 34-35); measuring a resultant deflection of said flow meter component (sensors measure motion, column 1, lines 42-44); and determining said oscillation period responsive to said force and deflection (column 2, lines 33-35).

Regarding claims 9 and 25, Patten et al. discloses said oscillation periods are determined by solving a multiple degree of freedom model (determine period of oscillation based on flow calibration factor and density, column 2, lines 58-62).

Regarding claims 11 and 27, Patten et al. discloses said calibration error is corrected using coefficient estimation techniques (column 9, lines 37-41).

Regarding claims 12 and 28, Patten et al. discloses said calibration error is corrected using multi-fluid calibration techniques (column 10, lines 28-30; Fig. 3).

Regarding claims 13 and 29, Patten et al. discloses said calibration error is corrected using trending techniques (using proportion of change, column 10, lines 28-30).

However, regarding claims 1 and 17, Pattern does not disclose determining/comparing the flexural stiffness of the flowmeter component.

Nevertheless, as discussed above, Pattern discloses determining the oscillation periods (or displacements) of the flow tube (see column 5, lines 2-12). Answers.com discloses a relationship between the oscillation frequency/period and the stiffness (see damping, paragraph 3).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to derive the stiffness from the oscillation period of Pattern as disclosed by Answers.com for the purpose of determining a physical characteristic of the flow tube. Thus, more tangible information about the flow tube is obtained.

Allowable Subject Matter

Claims 22-24, 26, and 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons For Allowance

The **combination** as claimed wherein said single degree of freedom model is solved using a method comprising means for determining a receptance transfer function, calculating an inverse receptance frequency response, and determining said flexural stiffnesses responsive to said frequency response (claim 22) or said single degree of freedom model is solved using a method comprising means for identifying constants, applying a transfer function model to a complex frequency response, converting said transfer function from a mobility form to a response form, extracting modal parameters from said transfer function, and calculating flexural stiffnesses responsive to said modal parameters (claim 23) or means for generating a response model of said flow meter structure, converting said response model to a modal model, converting said modal model into a spatial model, and determining said flexural stiffness from said spatial model (claim 26) is not disclosed, suggested, or made obvious by the prior art of record.

Response to Arguments

Applicant's arguments filed on March 17, 2009 have been fully considered but they are not persuasive.

With respect to the 35 USC 101 rejections, Applicants argue that "at issue therefore is what comprises a transformation of an article in a claim. The Federal Circuit in *Bilski* elaborated on the transformation test by citing *In re Abele*. *In re Abele*, 684 F.2d 902 (CCPA 1982) at 908-09. The Federal Circuit in *Bilski* further stated that the data in question in *Abele* 'clearly represented physical and tangible objects' and that 'the electronic transformation of the data itself into a visual depiction in *Abele* was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data represented.' Applicants herein amend independent claim 1 to satisfy the requirements of 35 U.S.C. § 101 per the decision in *Abele*. The method transforms a vibrational response of the flow meter into a calibration error condition that indicates a possible calibration error in the flow meter. The calibration error condition can reflect physical flow meter conditions such as erosion, corrosion, coating, changing pipeline mountings, or changing temperature, for example (see page 2, lines 14-18)".

Examiner's position is that *In re Bilski* requires that a § 101 process must (1) be tied to another statutory class (a particular machine or apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. If neither of these requirements is met by the claim, the method is not a patent eligible process under § 101 and should be rejected as being directed to non-statutory subject matter.

Claim 1 is directed to a method of validating a flow calibration factor of a flow meter based on the stiffness of a component of the flow meter. In claim 1, even though a possible calibration error condition is based on a vibrational response of the flow meter, neither the flow meter nor its component is transformed to a different state or thing. Thus, the physical transformation requirement is not met. Furthermore, as discussed above, the method is not tied to another statutory class. Thus, since neither of the requirements required by In re Bilski is met, the claimed method is not a patent eligible process under § 101.

With respect to the 35 USC 103 rejections, Applicants argue that in the present application, the flexural stiffness is not determined from the resonant frequency of the flowmeter, or from any manner of vibrational frequency. Instead, the flexural stiffness is determined from the application of a known force, using a measure of the resulting displacement (see page 6, lines 10-13).

Examiner's position is that claim 1 recites "determining the current oscillation period of said component from a flow meter vibration produced in response to an application of a predetermined force to one or more flow tubes of the flow meter". Thus, contrary to Applicants arguments, the flexural stiffness is determined from vibrational frequency. Nevertheless, Patten discloses determining the current oscillation period of said component (via 403) from a flow meter vibration (oscillation of flow tube, column 1, lines 34-35) produced in response to an application of a predetermined force to one or more

flow tubes of the flow meter (applying a force to a flow tube so the flow tube oscillates, column 1, lines 34-35).

Applicants further argue that "the Office Action concedes that Patten 'does not disclose determining/comparing the flexural stiffness of the flowmeter component.' The Office Action therefore provides the Answers document and alleges that Answers couples stiffness to frequency and further alleges that it would have been obvious to combine Patten and the Answers document. While Answers discloses a relationship between resonant frequency and stiffness, there is no teaching or suggestion in Answers as to why a calculation of stiffness would be useful.

Examiner's position is that Patten discloses determining a current oscillation period of said component (via 403); comparing said initial oscillation period to said current oscillation period (step 902); and detecting a calibration error condition responsive to comparing said initial oscillation period to said current oscillation (column 5, lines 9-12). Answers discloses that there is a direct relationship between oscillation frequency/period and stiffness (see damping, paragraph 3, line 1). Therefore, it would be obvious to use the oscillation frequency/period of Patten to derive the stiffness since the relationship between oscillation frequency and stiffness is known according to Answer.

Applicants further argue that the combination of Patten and Answers does not disclose storing an initial flexural stiffness. Furthermore, the combination of Patten and Answers does not disclose generating a flow meter stiffness value for the purpose of comparing to an initial flexural stiffness.

Examiner's position is that storing an initial flexural stiffness is not recited in the claims. Patten discloses determining an initial oscillation period (step 901) of a component of said flow meter (via 901); determining a current oscillation period of said component (via 403); and comparing said initial oscillation period to said current oscillation period (step 902). Since Answers teaches a relationship between oscillation frequency/period and stiffness, it would be obvious to use the determined oscillation period to derive stiffness. Thus, the combination of Patten and Answers suggests generating a flow meter stiffness value for the purpose of comparing to an initial flexural stiffness.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael P. Nghiem/

Primary Examiner, GAU 2863

June 4, 2009